

# The ICT Social Inclusion among Orang Asli Community in Gombak Area

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**Abstract**— As Malaysia is moving towards k-economy and developed nation by 2020, there is a need for all its citizens to participate in this socio-economic development. Orang Asli often have been cited as introverts and lag behind compared to other races in Malaysia. Literatures indicate a few researches have been studied involving the Orang Asli but a dearth is found focusing on ICT education and Internet usage among the Orang Asli schoolchildren. This study aims to fill in this gap by investigating the computer and Internet usage among the Orang Asli schoolchildren in three schools in Gombak area which is close to International Islamic University Malaysia (IIUM) main campus. The survey findings indicate most of the respondents are familiar with computer and Internet but the level of usage varies. Most parents are lower-income earners and affordability to own personal computers become a main issue. Even though schools provide limited time allocations for the students to use computer laboratories, the students also visit cybercafés, friends and relatives' houses to use computers and Internet.

**Keywords**- Computer, Internet, Orang Asli, Education, Malaysia, thin client, ICT inclusion, KICT, developing country

## I. INTRODUCTION

The topic of ICT inclusion and social inclusion and ICT has been the talk for a few years already [4]. The Information Age is changing how we work, learn, spend leisure time and interact with one another. In the UK, for example, there is continued strong long-term growth in Internet penetration with 39 per cent of households currently connected to the Internet and 53 per cent of UK adults having access to the Internet at home, at work or at a public access point. However, there remains a digital divide [5] [13], which particularly affects people living in deprived neighbourhoods. For example, the beacon councils for social inclusion through ICT have delivered excellence across a range of services to bridge this gap.

In Malaysia, such an initiative for social inclusion has been undertaken for e-Bario project since 1999. Bario was selected due to its remote area in Sarawak and also their acquaintances with UNIMAS for previous bio-diversity projects. Total project fund was MYR820,000.00 which was funded by many organisations locally and abroad. Other developed countries have also still researched in this area of ICT social inclusion especially using new technology delivery mechanism such as thin clients [5].

The Orang Asli in Malaysia lives in settlement and non-settlement villages. The numbers who live in settlement area are decreasing whereby many of them have come out and live with other citizens like those in Gombak areas. Some of them migrated from other states to those areas due to works, better opportunities, better public amenities like the Orang Asli hospital, museum and library and also schools.

The availability of ICT in the community and continuous guidance from academics, practitioners and students can increase their level of confidence, well-being status and socio-economic status [6] as well as ICT inclusion which UNESCO was fighting hard for.

## II. ORANG-ASLI AND EDUCATION

### A. Orang Asli

The Orang Asli, the indigenous people or aborigines, make up 0.5% of the total population of Malaysia [11]. The Orang Asli has 18 ethnic subgroups and is not a homogeneous race, which indicates their diversity in terms of cultures, traditions and the way they live their lives. The Orang Asli people have different beliefs and languages which all depend on the ethnicity and their locations. Thus, their relationships, life dependencies and identities make them very much related to their land and nature.

### B. Issues of Orang Asli

The Orang Asli had been known to be faced with different problems such as population and education. They are also regarded as barbaric and too lazy to work hard to develop themselves and their race [11]. Education, being the major setback for the Orang Asli, had been a problem to the nation to develop these communities. By providing and encouraging the young people in their community to continue their studies in order to appreciate the importance of education and its ability to help them develop their next generation.

From the study by [11], it was found that developing and creating awareness among the Orang Asli had not yielded a tangible result, rather complicated matters more. Therefore, alternative methods should be derived that will give them a sense of belonging and excitement which might not look as if they are left behind but rather a new opportunity to experience. The implementation of different programmes at their early stages of life might be a very good way of developing and creating awareness among them such as teaching the children in the kindergarten and the primary

school level. If the interests had been developed and the importance had been known, their chances of dropping out of the secondary school will be minimal due to the opportunities they can foresee ahead of them.

Moreover, Mohd Nizam et al. [1] reported that the Orang Asli are said to be introverts but [1] claimed that these set of people are also said to be intelligent and spend most of their time thinking and using their brain for activities that will benefit them rather than talking.

In addition, Colin [2] stated that “Orang Asli are not anti-development” and that the Orang Asli have frequently requested for various forms of assistance especially to improve the quality of their life in areas such as health, education, human capital formation and infrastructure. However, the steps taken towards achieving these request might be different from the Orang Asli expectations which might result into a waste of efforts and public funds by the government. In short, the development efforts should be directed towards the Orang Asli, not for the sake of achieving integration but because they are a community deserving such assistance like other races.

### III. EDUCATION AND INTERNET

#### A. Internet Usage Activities

According to [9] and [10], four Internet activities can be identified which include browsing, messaging, downloading and purchasing. While in other study, Internet is said to be used for entertainment, to access health or medical information, shopping, stay current with news and event, and also for staying in touch with friends and family and access research topic [12]. This show that “to stay in touch with friends and family” involve messaging, and can further be divided into instant messaging and e-mail, while those that access entertainment site, stay current with news and event, shopping and having access to medical or health information perform the activities of browsing, downloading and purchasing. These indicate some of the activities that the Internet can be used for, but we cannot conclude using Internet without mentioning its usage for educational purpose such as for primary school, secondary school and the tertiary institutions. Base on these usage activities, the Orang Asli can have access to downloading, browsing what they consider useful to them, such as having access to their health information and considering access to information that will be useful to their community, messaging other people and having access to the global village at large, where they can easily communicate with the outside world without third party interference.

#### B. Educational Impact

Internet has changed the learning processes, knowledge acquisition and the interaction between the learners and the learned. Schools are currently using Internet as their main source of acquisition of research materials, students are using the Internet for their first class information seeker and education is being developed rapidly in the developing nation due to the Internet service as the students need not

travel thousands of kilometers before acquiring knowledge needed and having with them the materials needed for their studies. The researchers, students, teachers and the educational institutions are more productive and efficient due to proper utilisation of the Internet. The utilisation of the web portals are not left out, as this portal might provide you with different applications such as e-mail, chat, forum, directory and news that are of relevance to the user and all these on one page.

Considering using Internet by the Orang Asli without education might lead to unethical utilisation and misinformation however, using the Internet to acquire the education and information will lead to understand and knowing what the Orang Asli should know as the use of other technology such as television set and hand phone is a common within the Orang Asli community that are near to the urban area.

### IV. INTERNET AND THE ORANG ASLI SCHOOLCHILDREN

The Internet is a worldwide communications network originally developed by the United State Department of Defense. It has seen an explosion in commercial use since the development of easy-to-use software for accessing the Internet [7], as this software had made it easier for the educated and non-educated individuals to have access to the Internet, the Orang Asli will be able to access the Internet without much difficulty. These set of people are reserved, have no much access to education, cannot be easily enlighten, but with the introduction of the Internet in their area, it will speed up the self development interns of education, enlightenment and acquisition of different knowledge in different field of learning. Different software can be found on the Internet which range from those that teaches how to learn different languages to those that teaches how to learn to use the technology itself. Orang Asli will be able to learn different things by themselves and also help them in acquiring education and different other knowledge without other peoples intervention and also feeling the sense of belonging and independence in securing the knowledge they desire and deserved.

According to the 2000 General Social Survey (GSS) on technology use, off-reserve Canadians with Aboriginal ancestry were just as likely to be Internet users as people without Aboriginal origin — 50% and 53%, respectively, had used the Internet at some time in the 12 months preceding the survey (the difference is not statistically significant). So it appears that access to the Internet may not be the main barrier to its use [3].

In fact, almost since the birth of the “digital divide,” researchers have spoken of the “second digital divide.” This term acknowledges that there can be a divide between users themselves, based on whether they are frequent Internet users, are confident of their skills, use the technology effectively, or view the Internet as valuable, among other factors. Although it is less noticeable, this second divide can inhibit effective Internet use just as much as the first [3].

Therefore, in order to fill in the dearth of research in this area in Malaysia, this study will investigate on the Orang

Asli schoolchildren computers and Internet usages in Gombak areas. Specifically, it aims to answer the following research questions and objectives:

- 1) *What is the level of computers and internet usage among Orang Asli schoolchildren in Gombak areas.*
- 2) *What factors contribute to the internet usage among Orang Asli schoolchildren in Gombak areas.*

## V. METHODOLOGY

The research surveyed three schools (one primary and two secondary) in Gombak areas nearby IUM Gombak campus. A total of 54 responses were collected. Table I below shows the demographic analysis of respondents:

TABLE I. DEMOGRAPHIC PROFILE OF RESPONDENTS

a) Sex	Male	%	Female	%	Total
Freq	26	48.1	28	51.9	54
b) Age	10-12	13-15	16-18	NA	
Freq	18	23	13	-	54
c) Father salary	< 500	501 – 1,000	1,001 – 1,500	1,501 – 2,000	
Freq	6	13	1	3	23 <sup>1</sup>

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## VI. FINDINGS

From our survey to three schools in Gombak area involving Orang Asli schoolchildren, most of the respondents affirmed that they learned computers and Internet in varying degrees in schools as well as at home or cybercafés. The students represent 18 from primary and 23 for forms 1 to 3 and 13 for forms 4 and 5. Male students total 26 while female were 28 respondents. 99% respondents live in Batu 7, 10, 11 and 12 Gombak while only 1 student lives in Jalan Pahang.

- 1) *What is the level of computers and internet usage among Orang Asli schoolchildren in Gombak areas.*

The findings suggested that the students come from a family who work in the vicinity and they are quite exposed to normal life compared to those in settlement areas. Majority of the parents work either in public or private sector in nearby vicinity and earn below MYR1,500.00 per family. This low income bracket could contribute to the unaffordability to purchase own personal computer let alone subscribing to Internet facilities. Six students reported that their fathers' salaries were below MYR500.00 and five reported that their fathers earned above MYR1,000.00.

<sup>1</sup> Some respondents indicate their fathers were deceased, unemployed or unsure. Twelve (12) respondents indicated their mothers' salaries below MYR1,000.00 per month.

twelve students reported that their mothers earned salaries between MYR200.00 to MYR1,000.00 per month.

Below are the results of SPSS 10.0 analysis showing the frequencies and descriptive statistics with the support of graphical illustrations from our survey to three schools in Gombak area. Table II shows the frequent places the respondents visited to access to computers.

TABLE II. PLACES RESPONDENTS ACCESS TO PCS

	School	Cybercafé	House	Total
Freq	24	18	1	43
Percent (%)	44.4	33.3	1.9	79.6

The students reported that they frequently use computers in schools or cybercafés. 24 (44.4%) replied that they used computers in schools compared to 18 (33.3%) went to cybercafés. Only 1 (1.9%) said that he had a computer at home. Eleven (20.4%) did not answer the question. In another question, 29 (53.7%) students said that they used PCs on average below one hour daily while 25 (46.3%) used 1-3 hours daily. 26 (48.1%) said that they used PC once a week, 24 (44.4%) used 2-3 times a week, 3 (5.6%) used PC 4-5 times a week and 1 used almost every day as can be seen in Table III.

TABLE III. WEEKLY PC USAGE

	Once a week	2-3 times	4-5 times	> 6 times	Total
Freq	26	24	3	1	54
Percent (%)	48.1	44.4	5.6	1.9	100.0

On access to and usage of Internet, 41 (75.9%) answered 'YES' while 13 (24.1%) answered 'NO'. 3 (5.6%) students learned Internet at houses, 38 (70.4%) at schools, 10 (18.5%) at cybercafés and 2 (3.7%) at others. 1 student did not answer the question. On average, 31 (57.4%) respondents were online for less than one hour daily, 20 (37%) for 1-3 hours and 3 did not answer the question. When asked about their weekly online access, 33 (61.1%) responded they were online once a week, 17 (31.5%) were online 2-3 times a week, 1 student reported to be online almost every day and 3 did not answer the question.

- 2) *What factors contribute to the internet usage among Orang Asli schoolchildren in Gombak areas.*

The findings suggested that the main factors contributing to computers and Internet usages are family income, access to school computers laboratories and individual willingness to learn. To answer this second research question, several questions on 5-point Likert scales were used. Some of the questions were adapted from [3]. Below are the questions, frequencies and total percent (%) results in Table IV:

1. I use Internet to send and receive message from friends.

2. I use Internet to send and receive message from school friends.
3. I use Internet to send and receive message from families.
4. I use Internet to download homework.
5. I use Internet to download games.
6. I use Internet to download educational materials.
7. I use Internet to search for useful information for my school activities.
8. I use Internet to search for games information.
9. I use Internet to search information about institutes of higher learnings.
10. I use Internet for online games.
11. I use Internet to send and receive instant message like ym, windows live, skype etc.
12. I use Internet for other purposes.

TABLE IV. REASONS USING INTERNET

Questions	Never	Rare	Some times	Often	Always	Freq. Total
Q.1.	41	3	6	4	-	54
Percentage	75.9	5.6	11.1	7.4	-	100.0
Q.2.	40	6	5	3	-	54
Percentage	74.1	11.1	9.3	5.6	-	100.0
Q.3.	47	3	3	1	-	54
Percentage	87.0	5.6	5.6	1.9	-	100.0
Q.4.	25	16	6	6	1	54
Percentage	46.3	29.6	11.1	11.1	1.9	100.0
Q.5.	23	12	16	3	-	54
Percentage	42.6	22.2	29.6	5.6	-	100.0
Q.6.	20	11	17	4	2	54
Percentage	37.0	20.4	31.5	7.4	3.7	100.0
Q.7.	28	9	9	7	1	54
Percentage	51.9	16.7	16.7	13.0	1.9	100.0
Q.8.	28	11	12	3	-	54
Percentage	51.9	20.4	22.2	5.6	-	100.0
Q.9.	33	10	7	3	1	54
Percentage	61.1	18.5	13.0	5.6	1.9	100.0
Q.10.	36	5	9	4	-	54
Percentage	66.7	9.3	16.7	7.4	-	100.0
Q.11.	39	6	4	5	-	54
Percentage	72.2	11.1	7.4	9.3	-	100.0
Q.12.	24	10	13	1	6	54
Percentage	44.4	18.5	24.1	1.9	11.1	100.0

From Table IV, 41 (75.9%) students said they never used Internet to send or receive messages from friends. Only 4 (7.4%) replied 'often' answer. Similarly, 40 (74.1%) students said they never use Internet to send or receive messages from school friends. Only 3 (5.6%) answered 'often'. Moreover, 47 (87.0%) students said they never use Internet to send or receive messages from family members while only 1 (1.9%) answered 'often'. On the question whether they use Internet for downloading homework, 25 (46.3%) answered 'never', 16 (29.6%) answered 'rare', 6 (11.1%) answered 'sometimes', 6 (11.1%) answered 'often' and 1 (1.9%) replied 'always'.

On Question 5, 23 (42.6%) students said they never used Internet to download games while 16 (29.6%) answered 'sometimes' and 3 (5.6%) answered 'often'. Interestingly, 20 (37.0%) said they never used Internet to download educational materials, 11 (20.4%) answered 'rare', 17 (31.5%) replied 'sometimes', 4 (7.4%) replied 'often' and 2 (3.7%) replied 'always'. One point to note is that those replying 'sometimes' to 'always' could be from the secondary level students where they search from the Internet for their educational-related materials for examinations or school assignments or projects. Those in the standard six in primary school did not see the importance of using the Internet to search for educational materials for examinations. These primary schoolchildren also said that they seldom used computers at school. This is shown by question 7 on using the Internet to search for useful information for their school activities. 28 (51.9%) answered 'never', 9 (16.7%) answered 'rare' and 'sometimes' respectively, 7 (13.0%) replied 'often' and 1 (1.9%) replied 'always'.

For Question 8, 28 (51.9%) students said that they never used the Internet to search for games-related information. 11 (20.4%) and 12 (22.2%) replied 'rare' and 'sometimes' respectively while only 3 (5.6%) said 'often'. On the other hand, more than half of the respondents, 33 (61.1%) and 10 (18.5%) replied that they never and rarely used the Internet to search for information relating to institutes of higher learning. This is probably because they are in primary school and below 15 years old. 7 (13%), 3 (5.6%) and 1 (1.9%) answered 'sometimes', 'often' and 'always' respectively. These could be students in the forms 4 and 5. Interestingly, for Question 10, 36 (66.7%) and 5 (9.3%) replied that they never and rarely used the Internet for online games. Whereas 9 (16.7%) and 4 (7.4%) said that they 'sometimes' or 'often' played online games respectively.

Regarding the use of the Internet for sending and receiving instant messages or online chatting, 39 (72.2%) and 6 (1.1%) replied that they never and rarely used the Internet for that purpose respectively. Only 4 (7.4%) and 5 (9.3%) answered 'sometimes' and 'often' respectively. Finally, 24 (44.4%) students said that they never used the Internet for other purposes. 10 (18.5%) and 13 (24.1%) replied 'rare' and 'sometimes' respectively. Whereas 1 (1.9%) replied 'often' and 6 (11.1%) answered 'always' for Question 12.

## VII. DISCUSSION AND IMPLICATIONS

Based on the result findings in Section VII above, the Orang Asli namely the respondents are considered to live in normal residential places which is non-settlement villages for Orang Asli. The students went to schools like other Malaysian citizens. They had access to all amenities and infrastructures available. Albeit the salaries levels, Orang Asli indicated they want to change their lives for the better. They want their children to live and succeed better than their parents. Some students indicate their advancement in computers and Internet usages compared to others. These students perhaps come from better-off families or relatives who have exposed to better lifestyles. While many respondents indicate their willingness to learn computers and Internet, perhaps their parents and relatives need to find the means to accommodate these needs beside those which are available at schools. Parents must also encourage their children to go to cybercafés, libraries and other places to learn computers and Internet.

This study's findings are in line with [8] and [1] that some of the Orang Asli, despite being introverts, are said to be intelligent and spend most of their time thinking and using their brain for activities that will benefit them rather than talking. In addition, [3] stated that the general portrait of Internet users in Canada is well-known by now. People who use the Internet are younger and better-educated than those who do not; they are employed, have a higher income and generally live in urban centres. According to the 2001 Aboriginal Peoples Survey the same is true of Aboriginal Internet users. Off-reserve users with Aboriginal ancestry tend to be better-educated and more urban than those who do not use computer technologies. For example, more than half of non-users had less than secondary school education, compared with less than one-quarter of users. About three-quarters of Internet users lived in urban areas, which are generally well-served by Internet service providers, while almost half of non-users lived in rural areas or the North, where access can be more difficult.

Aboriginal people who used the Internet were also much more likely to be working: 68% versus 37% of non-users were employed, and they were frequently members of higher-income families: 44% lived in households reporting annual income of \$60,000 or more, compared to 19% of Aboriginal persons who were not Internet users.

The 2001 survey [3] also revealed that most Aboriginal Internet users were going online at home; with 73% of users identifying home as one of the places they went online, it was by far the most common place to surf the Net. The reasons for this are self-evident: home is much more convenient than other places where the time available may be limited and, in the case of public facilities such as libraries and community centres, opening hours are restricted. However, a home connection is not feasible or affordable for everyone, and the survey data show that rates of Internet use from home are lower among users from lower income households.

The implication of this study reveals that the non-settlement Orang Asli is far better off and has been exposed

to computers and Internet. Thus, some social studies claiming that Orang Asli are shy and did not have equal access to amenities are rebuttable. This study provides a comparison with the practice in Canada albeit different type of respondents. Nonetheless, if the aborigines in Canada use Internet at home then their children must also have the same accesses. This can be applied in Malaysia and in the study context also whereby if their parents can afford to have Internet accesses at home then the children can have frequent accesses to Internet as well.

## VIII. CONCLUSION AND FUTURE RESEARCH

In general, most respondents affirm that they know, to a certain extent, how to use computers and Internet. Some subjects indicate the comfort level of using Internet, while many still are not familiar to using Internet for many reasons. Nevertheless, despite computer lessons are available in schools, the children need to be familiar with computers and Internet so that they can reap the benefits out of computers and Internet reasonably.

While most students reported that frequently use computers at schools and cybercafés which indicates that they do not own computers at home, their level of usages and familiarities with computers and Internet are quite good. The Canadian survey [3] shows that most their aborigines afford to own personal computers which can be shared by family members. This is not the case with this study's respondents whereby only one student replied that he used computer at home. Thus, this leads us to suggest whether the families cannot afford to buy a personal computer, lack in knowledge about computers and Internet or wait for the government to provide free personal computers to the Orang Asli.

The survey, however, is limited to three schools, two secondary and one primary, only. The number of respondents also is relatively small compared to the whole Orang Asli population in Selangor alone. Hence, the study might be representative to the sample of study but may not be generalisable to the other areas in Selangor or other states. This study serves as a pilot study and is potential to be expanded to other areas in Selangor and other states.

The respondents' answers might be subjective depending on the level of knowledge and understanding of the computers, Internet and also the survey questions.

This project is hoped to catalyse and open for more researches that would benefit the Orang Asli community, IIUM and the country. In addition to the objectives and expected outputs this project may serve not only as a research project but also an impetus for more community service projects on the part of IIUM in general and KICT in specific. Such a contribution will also justify the existence of the university within the Gombak community particularly the inclusion of the indigenous group as one of the direct beneficiaries of the university's outputs. In addition, community project is an excellent tool to portray and reflect the university's corporate responsibility and help to improve its image as well as reputation nationally and internationally leading to a better ranking.

At the moment, a request letter has been sent to Director of JHEOA seeking permission to place two thin client

personal computers in the Orang Asli community library in Batu 12 Jalan Gombak next to Orang Asli museum which is a gated and monitored administration area managed by JHEOA. Once an approval is obtained, researchers will install the thin clients and it will be opened to all Orang Asli schoolchildren in the nearby areas. The researchers will periodically monitor the usage of the computer and Internet to study the pattern and possibly this will lead for more beneficial researches in the future.

From this pilot project, it is hoped that similar study and project can be rolled-out to other Orang Asli areas in Selangor particularly and other states generally.

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#### REFERENCES

- [1] Adrian, F., Georgia, D., Peter, S., & Tomas, C. P. (2007). Personality and intelligence in business people: A study of two personality and two intelligence measures. *Journal of business psychology*, 22, 99-109.
- [2] Colin, N. (1997). The orang asli of peninsular Malaysia. Centre for orang asli concerns, retrieved on 8th June, 2009 at <http://www.magickriver.net/oa.htm>.
- [3] Crompton, S. (2004). Off-reserve Aboriginal Internet users. Canadian social trends. Statistics Canada — Catalogue No. 11-008 Statistics Canada — Catalogue No. 11-008
- [4] Gillard, H., Mitev, N. and Scott, S. (2006), ICT Inclusion and Gender: Tensions in Narratives of Network Engineer Training. *The Information Society archive*, 23, 1, pp. 19-37. ISSN:0197-2243.
- [5] ITU (2003), Building the Information Society with ITU. Document WSIS/PC-3/CONTR/164-E, 15 September 2003, Council Working Group on the World Summit on the Information Society, 4th Meeting, Madeira — 10-11 September 2003.
- [6] ITU world summit report 2005)
- [7] Jerry, F., and Alan, D. (2007). *Business data communications and networking* (9th ed.). USA: John Wiley & Sons Inc.
- [8] Mohd Nizam. A., Ruhizan, M. Y., Kamaruzzaman, S., Ahmad, R. I., and Juhari, A. (2009). Initial study on increasing productivity of Orang Asli in Malaysia. *European journal of Social Sciences*, 8(3), 441-448.
- [9] Thompson, S. H. T. (2001). Demographic and motivational variables associated with internet usage activities. *Internet Research: Electronic Networking Applications and Policy*, 11(2), 125-137.
- [10] Thompson, S. H. T., and Vivien, K. G. (1997). Usage patterns and perceptions of the internet: the Gender gap. *Equal Opportunities International*, 16(6/7).
- [11] Tijah, C., Jerald, J., and Pusat, K. (2003). Creating knowledge for change: a case study of sinui pai nanek sengik's educational work with orang asli communities in Malaysia. Asia South Pacific Bureau of Adult Education: Malaysia, retrieved 10th June, 2009 at [port.unesco.org/education/es/ev.php-url\\_id=30571&url\\_do=do\\_printpage&url\\_section=201.html](http://port.unesco.org/education/es/ev.php-url_id=30571&url_do=do_printpage&url_section=201.html)
- [12] Tim, R., Rajesh, I., David, B. K., and Jacqueline, K. E. (2007). The elderly's internet usage: an updated look. *Journal of Consumer Marketing*, 24(7), 406-418.
- [13] Tobias, H. and Hannes, S. (2002), "The Digital Divide Index - A Measure of Social Inequalities in the Adoption of ICT". ECIS 2002 Proceedings. Paper 35. <http://aisel.aisnet.org/ecis2002/35>.